



Forest Ecology Research Group

Senior Research Associate Position in the Forest Ecology Research Group through the Enhancing Northern Community & Ecosystem Resilience to Fire project

2023 was the first time in recorded history that global temperatures exceeded 1.5C above pre-industrial averages. International climate change mitigation agreements aim to limit warming to this level, a goal that is already unachievable. The Canadian fire season associated with this temperature exceedance was one of shattered records; the urgency of preparing for and adapting to this best-case climate warming scenario and subsequent 2023-like fire seasons cannot be understated. The Northwest Territories (NWT) was one of the hardest hit parts of the country in 2023. 70% of the population was evacuated. Structures were lost in communities. Transportation corridors were closed, and communications were offline for considerable periods. There were also fire behavior surprises with implications for community and firefighter safety.

Recently burned areas have in the past slowed or stopped fire advance. This was not always the case in 2023, which created additional risk. This phenomenon was compounded by fuel buildup around communities created by a history of fire suppression that has led to longer fire free intervals. To keep NWT communities safe, we require improved information about how fires burned on the landscape in the past, how this is changing, what that means for future forest composition and fire risk, and how adaptation of fire management decisions around communities can reduce risk. This project will address these gaps, supporting operational fire management decisions and community protection planning.

As part of this newly funded collaboration between the Government of the Northwest Territories and Wilfrid Laurier University and funded through Natural Resources Canada's Wildfire Resilient Futures Initiative, we are recruiting several positions including a senior research associate through Laurier's Forest Ecology Research Group (<https://forestecology.ca>). This position can be based in Waterloo, Ontario, Edmonton, Alberta, or Yellowknife, Hay River, or Fort Smith, Northwest Territories. Evaluation of applications will continue on a rolling basis until the position is filled.

This program has several interrelated components, some desktop/modelling, others field-based. We are looking for an individual who can provide oversight on all scientific aspects of this project, working hand in hand with project leads and the broader team. This individual will help oversee our progress against scientific goals of the project and ensure we are applying best practices in data management and leveraging connections with other relevant projects.

Expected research contributions: Below is a list of activities outlined in the proposal that the candidate will provide direct oversight on/lead. This is not exhaustive, and we see tremendous potential to leverage connections to other projects, identify additional initiatives, etc.

1. Investigating fire management strategies to promote less severe fires and more resilient forests in the NWT. While wildfire risk differs among communities, there are concepts that can govern effective risk-mitigation plans. We will investigate how recent burns, fuels modification, and non-flammable landscape features may enhance fire management under a range of weather conditions. We will also work to better characterize NWT fire history.
2. Evaluating the conditions that caused the extraordinary short interval reburning in 2023. We will evaluate why some areas reburn and others don't, to advance our understanding of the role of recent fires as fuel breaks. To inform this work, we will collect data in the field and from remote sensing on forest cover, regeneration rates, fire behavior (crown vs. surface), burn severity, and weather.
3. Exploring how fire suppression history affected outcomes in the areas surrounding NWT communities most affected by fire in 2023. Using fire-simulation tools, we will explore how past, extinguished ignitions may have: (i) caused damage to the community and, conversely, (ii)



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reduced the landscape flammability and possibly avoided catastrophic 2023 wildfires. This will provide concrete direction to all NWT communities by informing fire management policies and decisions that could make communities more resilient in the face of changing wildfire.

Data analysis/management: The candidate will be responsible for ensuring that the team is carefully curating data generated/compiled by this project to ensure reproducible research outcomes. They will support training of more junior team members in best data management practices.

Supervision/mentorship: This position will directly supervise the junior GIS analyst for the project. We also see opportunity to be involved in some hiring processes as well as mentorship of team members including graduate students.

Engagement/outreach: The ideal candidate will be able to work closely with project partners and affected communities. This individual will play a role in developing educational and outreach materials with project team members. There will also be a need for some travel to Northwest Territories to meet with community and government partners.

Qualifications:

- Ph.D. in ecology, natural resource sciences, or a related field;
- Evidence of publishing in peer reviewed literature;
- Experience with geospatial data analysis and remotely sensed data;
- High-level programming skills (e.g., R or Python);
- Experience with statistical modelling;
- Able to confidently interact with people of varying backgrounds;
- Experience with spatial simulation modelling an asset;
- Experience with data curation and management

The direct supervisor will be Jenn Baltzer (Wilfrid Laurier University) with a team of collaborators including Rick Olsen and Matthew Coyle (GNWT), Marc Parisien, Ellen Whitman and Raquel Alfaro Sanchez (Canadian Forest Service Northern Forestry Centre), Laura Bourgeau Chavez (Michigan Technical Institute), and Xanthe Walker (Northern Arizona University).

Start date, duration, & compensation: The 3-year position will start on April 1, 2025, or as soon as possible, with fieldwork commencing in summer 2023. The annual salary is \$100,000 (including a top-up in lieu of benefits). Additional funding is available for travel, publications, and conferences.

Our program values diversity and inclusivity, recognizing that a diversity of experiences and perspectives is vital to advancing innovation, critical thinking and complex problem solving. We are committed to developing and maintaining a culture that is positive, collegial, and respectful of all members, and in which wellness and healthy work-life balance are valued.

To Apply: Please provide a letter of interest, your CV, and an example of your writing skills in the form of a published, peer-reviewed manuscript. Your letter should indicate how you meet each of the criteria, and state when you are able to start. If you feel comfortable, please also identify circumstances that may have impacted your career. We will accept applications until a suitable candidate is found.

Send application packages to
Dr. Jennifer Baltzer jbaltzer@wlu.ca